BEDROCK GEOLOGY OF THE DELLROY QUADRANGLE, CARROLL COUNTY, OHIO

by

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OHIO DIVISION OF GEOLOGICAL SURVEY
REPORT OF INVESTIGATIONS NO. 68

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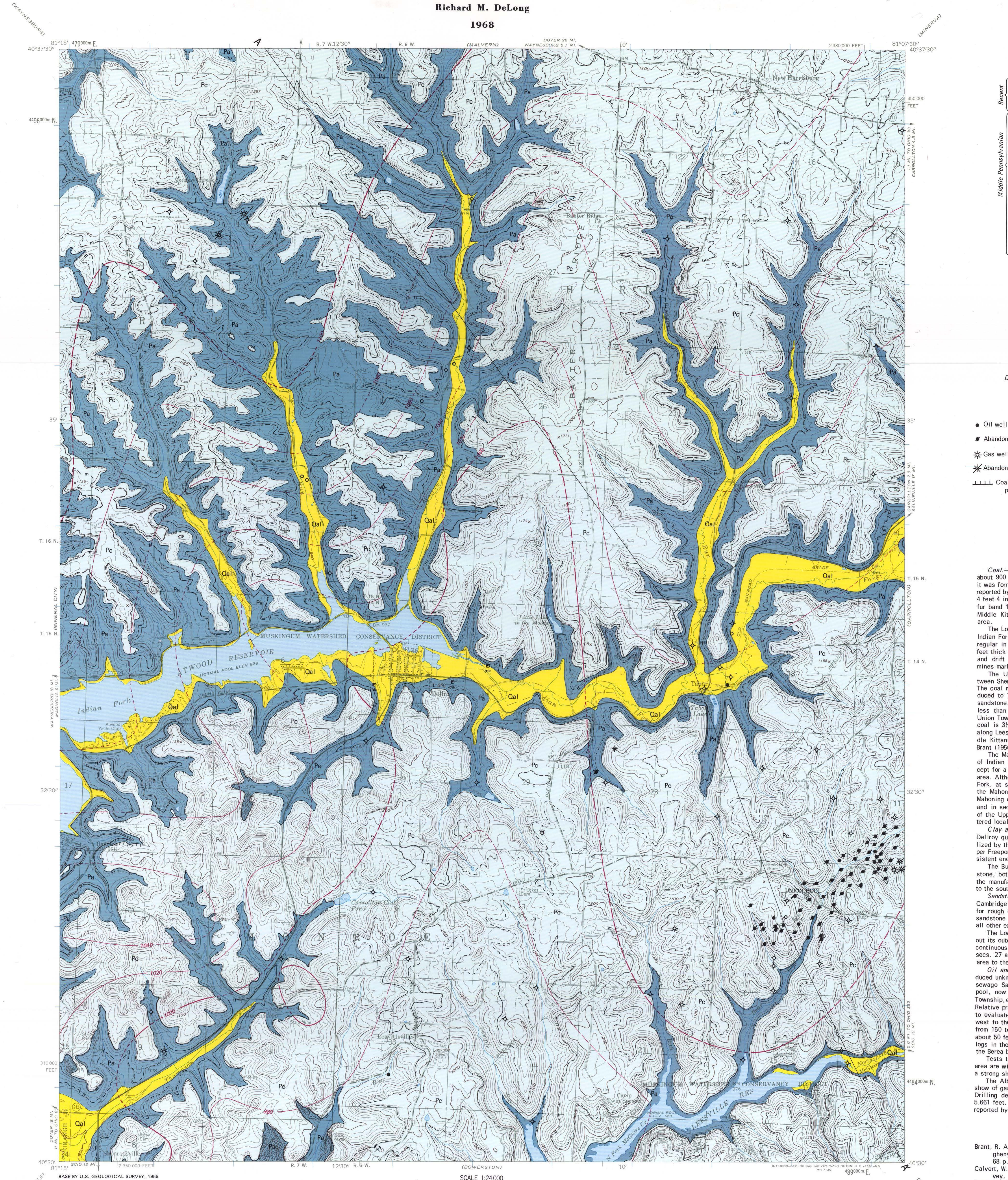
DELLROY QUADRANGLE, OHIO

SYSTEM	GROUP	MEMBER OR BED	LITHOLOGY	THICKNESS IN FEET	DESCRIPTION
QUATERNARY		Alluvium		0-50	Silt, with sand lenses, scattered rock fragments, and pebbles.
PENNSYLVANIAN	Conemaugh			30	Shale and sandstone. Shale, gray to tan. Sandstone, gray, thin-bedded, fine-grained.
		Duquesne coal		0-0.4	Coal, local.
				14	Shale, gray to brown; poorly bedded gray shale in upper part, mudstone below. Limestone nodules in upper part of mudstone; limestone gray, weathering to yellow; dense, finely crystalline, nonfossiliferous.
		Ames limestone		0.3-0.8	Limestone, gray, nodular; nodules imbedded in weakly bedded gray to brown shale or mudstone; abundant marine fauna.
				15-25	Shale, gray; gradational upward into mudstone.
		Harlem coal		0.3-1.7	Coal, observed only as a blossom.
		Harlem clay		0.7-1.7	Clay, gray, plastic.
		Saltsburg shale and sandstone		47	Shale, sandstone, and mudstone. Mudstone at base; brown, red, poorly exposed; gradational upward into gray shale that is poorly bedded in upper part. Sandstone, thin, limonite-stained; containing some fresh-water(?) limestone grains.
		Barton coal		0-0.1	Coal, local.
		Ewing limestone		0-2.5	Limestone, light-gray, finely crystalline, fresh-water, nodular; occurring also as argillaceous masses imbedded in mudstone.
		Cow Run shale and sandstone		30-60	Shale, sandstone, and mudstone. Shale, light-yellowish-gray to brown, silty to sandy, thin-bedded to massive; gradational upward into brown mudstone. Sandstone, gray to brown, fine- to medium-grained, thin- to medium-bedded, conformable.
		Portersville limestone		0-0.5	Limestone, medium-gray; medium to finely crystalline, bedded to nodular, discontinuous; sparse to abundant marine fauna.
		Anderson coal		0-1.5	Coal, bright and blocky to shaly, discontinuous.
		Anderson clay		0-3.5	Clay, light-gray to yellow, plastic.
				17-30	Shale, sandstone, and mudstone. Shale, gray to tan, sandy; gradational upward to mudstone. Sandstone, white to light-brown, local; conglomeratic at base; fine-grained and thin-bedded upward.
		Cambridge limestone		0-0.5	Limestone, light- to greenish-gray, finely crystalline, bedded to nodular, discontinuous; sparse to abundant marine fauna.
		Wilgus coal and clay		0-3.0	Coal and clay. Clay or mudstone with smut streak; discontinuous.
		Buffalo shale and sandstone		23-36	Shale, sandstone, and mudstone. Shale, dark- to medium-gray below, brown and tan upward, thin- to medium-bedded; varying to mudstone at top of unit. Sandstone, gray to brown, thin- to medium-bedded, fine- to medium-grained, local. Sparse pelecypods and crustaceans at base locally.
		Brush Creek coal		0-1.0	Coal, shaly, local.
		Brush Creek clay		0-3.9	Clay, light-gray, sandy, local; low plasticity.
		Mason clay		0-1.8	Clay, gray; varying locally from clay to mudstone.
		Upper Mahoning shale and sandstone		42-60	Shale, sandstone, and mudstone. Roof shale, dark-gray; gradational laterally and vertically into thin- to medium-bedded medium- or light-gray or brown silty to sandy shale; shale at top gray to mottled red and brown; poorly bedded shale to mudstone. Sandstone, gray to brown, fine- to medium-grained, conformable; gradational laterally into shale.
		Mahoning coal		0-2.4	Coal, irregular in thickness; two benches separated by shale 3 inches to 2 feet thick.
		Thornton clay		0-5.5	Clay, light-gray to brown, plastic.
		Mahoning limestone		0-0.5	Limestone; light-olive-gray, weathering to yellow; finely crystalline, fresh-water; occurring as nodules up to 6 inches in diameter.
		Lower Mahoning sandstone and shale		21-43	Sandstone, shale, and mudstone. Sandstone, light-gray, limonite-stained, micaceous; fine to coarse and angular to subangular grains; commonly 20 to 30 feet thick; disconformable, massive at base but medium- to thin-bedded upward; coalescing with Upper Freeport sandstone in secs. 16 and 17, Rose Township. Shale, dark-gray; thin-bedded silty to sandy tan shale below, gray to brown shale and mudstone above; thin-bedded roof shale found locally.
	Allegheny	Upper Freeport (No. 7) coal		0-4.8	Coal, variable in thickness; locally absent; discontinuous thin shale and pyrite partings present; sandstone cutouts common.
		Upper Freeport clay		0-8.9	Clay, light- to bluish-gray, plastic; local flint clay inclusions; gradational with underlying mudstone.
		Upper Freeport limestone		0-3.9	Limestone; gray, weathering to yellow; generally nodular and imbedded in mudstone; limestone locally bedded, irregular in thickness.
		Bolivar coal and clay		0-3.0	Coal and clay. Coal, local. Clay and mudstone, gray, dusky red. Unit coalescing with Upper Freeport clay.
		Upper Freeport shale and sandstone		21-60	Shale, sandstone, and mudstone. Shale; thin-bedded dark-gray roof shale up to 1 foot thick succeeded by thin-bedded tan to light-gray shale; varying laterally to sandstone, tan to brown, micaceous; thin- to medium-bedded but locally massive at base; shaly upward; very fine- to medium-grained; grains subrounded to subangular, poorly sorted. Sandstone locally extending upward to the Upper Freeport clay but generally grading into massive semiplastic gray to varicolored mudstone or poorly bedded shale.
		Lower Freeport (No. 6A) coal		0-3.8	Coal, with shale parting 1 to 3 inches thick; absent in few places but irregular in thickness north of Indian Fork.
		Lower Freeport clay		0-3.0	Clay, light-gray, nonpersistent; low plasticity.
		Lower Freeport limestone		0-1.0	Limestone, gray, nodular, nonpersistent.
		Lower Freeport shale and sandstone		50	Shale and sandstone. Shale, tan to light-gray, silty to sandy, thin- to medium-bedded. Sandstone, gray to brown, thin- to medium-bedded, fine-grained, micaceous; gradational upward into shale.

Scale: 1 inch = 15 feet



BASE BY U.S. GEOLOGICAL SURVEY, 1959

10,000-foot grid based on Ohio coordinate system, north zone
1,000-meter Universal Transverse Mercator grid ticks, zone 17, shown in blue

Cartographic drafting by James A. Brown

CONTOUR INTERVAL 20 FEET
DATUM IS MEAN SEA LEVEL

APPROXIMATE MEAN DECLINATION, 1959

QUADRANGLE LOCATION

EXPLANATION

	Symbol	Unit	
Recent	Qal	Alluvium	QUATERNARY
Middle Pennsylvanian	Pc (a, c, bc, m)	Conemaugh Group a, *Ames limestone* c, *Cambridge limestone or Wilgus coal* bc, *Brush Creek coal or faunal zone* m, *Mahoning coal*	PENNSYLVANIAN
	Pa (uf, lf)	Allegheny Group uf, *Upper Freeport coal* lf, *Lower Freeport coal*	

Contact
Dashed where approximate

Coal or marine zone
Dashed where approximate

1060

Structure contour
Drawn on Upper Freeport coal. Dashed where approximate, short dashed where datum is above land surface; contour interval 20 feet.

● Oil well	⌖ Dry hole
Abandoned oil well	Dry hole with show of gas
✳ Gas well	○ Drilled hole, no data
Abandoned gas well	⚒ Abandoned sandstone quarry
⊥⊥⊥⊥ Coal strip mine, post-1959	◩ mk Abandoned shaft mine, coal designated

MINERAL RESOURCES

Coal.—The Middle Kittanning coal of the Allegheny Group lies about 900 feet above sea level in the vicinity of Dellroy, where it was formerly mined by shafting along Indian Fork. This coal is reported by Lamborn (1942, p. 14) to range from 3 feet 6 inches to 4 feet 4 inches in thickness at that locality and to contain a sulfur band 1 inch thick. There is no data on the thickness of the Middle Kittanning coal in the remaining part of the quadrangle area.

The Lower Freeport coal occurs slightly above drainage along Indian Fork and its tributaries and along Thompson Run. It is irregular in thickness north of Indian Fork but persistently 2 to 4 feet thick southwest of Dellroy, where it has been mined by strip and drift methods. Springs and caved entrances to abandoned mines mark the position of this coal along Thompson Run.

The Upper Freeport coal has been mined for a century between Sherrodsville and Dellroy and eastward along Indian Fork. The coal measures up to 4 feet in thickness but in places is reduced to 1 to 2 feet because of cutouts by the Lower Mahoning sandstone. About a mile north of Indian Fork the coal thins to less than minable thickness or is entirely absent. In sec. 16, Union Township, where it has been stripped, the Upper Freeport coal is 3½ feet thick. It has also been removed by drift mining along Leesville Reservoir. Reserves for this coal and for the Middle Kittanning and Lower Freeport coals have been reported by Brant (1956).

The Mahoning coal is apparently restricted to the area north of Indian Fork and east of the Rose-Harrison Township line except for a limited occurrence in the east central part of the map area. Although this coal was generally not seen south of Indian Fork, at some scattered exposures its position is indicated by the Mahoning limestone, which underlies it in other areas. The Mahoning coal has been stripped in sec. 28, Harrison Township, and in sec. 24, Monroe Township, in conjunction with stripping of the Upper Freeport coal, and it has been drift mined at scattered localities, most recently in sec. 13, Harrison Township.

Clay and shale.—The clays and shales above drainage in the Dellroy quadrangle area are not among those most commonly utilized by the ceramic industries of Ohio. The Lower Freeport, Upper Freeport, and Thornton clays are the only ones thick and persistent enough to have commercial potential.

The Buffalo shale and shales overlying the Cambridge limestone, both found in the hilltops in this map area, are used in the manufacture of face brick in the Bowerston quadrangle area to the south.

Sandstone.—Sandstone that lies above the position of the Cambridge limestone has been quarried for dimension stone and for rough construction stone in sec. 32, Monroe Township. The sandstone is local; shale occupies this stratigraphic position at all other exposures.

The Lower Mahoning unit is predominantly sandstone throughout its outcrop area here. It is correlative in age, but may not be continuous, with the sandstone body quarried for molding sand in secs. 27 and 33, Rose Township, in the Mineral City quadrangle area to the west.

Oil and gas.—The Union pool, discovered in 1916, has produced unknown quantities of oil and gas from the Berea and Cussewago Sandstones of Missisipian age (Calvert, 1964). This pool, now inactive, extends from secs. 16, 10, and 11, Union Township, eastward into the adjoining Carrollton quadrangle area. Relative production from the Berea and Cussewago is impossible to evaluate because of meager completion data. From the northwest to the southeast of the map area the top of the Berea lies from 150 to 50 feet above sea level and the formation averages about 50 feet thick. The Cussewago is not reported in many well logs in the area, but wherever it is present it is separated from the Berea by 1 to 10 feet of shale.

Tests to the Berea and Cussewago in other parts of the map area are widely scattered and range from dry holes to holes with a strong show of oil or gas.

The Albion ("Clinton") Sandstone of Silurian age yielded a show of gas in test holes in secs. 9 and 29 of Monroe Township. Drilling depths to the "Clinton" at these sites are 5,337 and 5,661 feet, respectively, and total thickness of the sandstone is reported by drillers to be 70 to 100 feet.

REFERENCES CITED

Brant, R. A., 1956, Coal resources of the upper part of the Allegheny formation in Ohio: Ohio Geol. Survey Rept. Inv. 29, 68 p.
Calvert, W. L., 1964, Oil and gas fields of Ohio: Ohio Geol. Survey, map.
Lamborn, R. E., 1942, The coal beds of western Carroll County and the coal beds in southeastern Mahoning County: Ohio Geol. Survey Bull. 43, 33 p.

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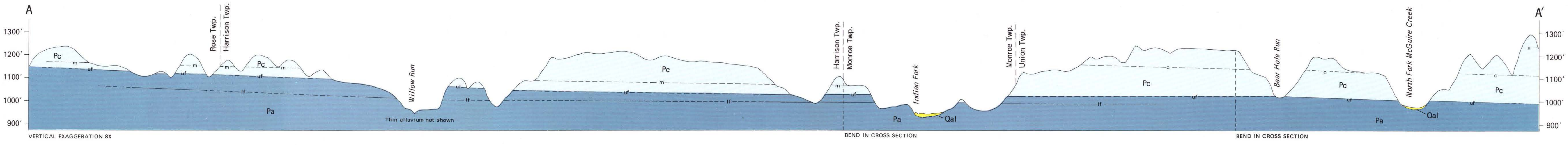

VERTICAL EXAGGERATION 8X